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APPENDICES

Appendix A Micell Formation Measurement of CTAT

Table A1 Surface tension and conductivity of CTAT at different concentration

Surface tension measurement			Conductivity measurement	
Concentration (%wt)	Log concentration	Surface tension	Concentration (%wt.)	Conductivity
0.0050	-2.300	59.54	0.002505	5.57
0.0100	-1.999	37.45	0.00501	7.83
0.0120	-1.920	33.61	0.00752	13.07
0.0140	-1.852	33.77	0.01002	17.32
0.0160	-1.795	33.54	0.01052	16.64
0.0180	-1.744	33.61	0.01102	17.27
0.0200	-1.698	33.63	0.01152	16.70
0.0220	-1.657	33.30	0.01202	16.75
0.0241	-1.619	33.28	0.01403	18.64
-	-	-	0.01603	19.25

Appendix B Calculation for Amount of CTAT Loading, AIBN Loading and Styrene Loading System

CTAT

Molecular weight: 445.7 $gmol^{-1}$

Styrene

Molecular weight: 104.15 $gmol^{-1}$

Density 0.906 ml/g

AIBN

Molecular weight: 164.21 $gmol^{-1}$

Table B1 Calculation of styrene loading and AIBN loading for CTAT concentration 5 %wt in the 140 g of total weight solution

styrene loading (CTAT:ST)	Mole of styrene	Total volume of ST (mL)	AIBN loading (Styrene:AIBN)	Mole of AIBN	Total weight of AIBN (g)
Low level (6:1)	$2.6x10^{-3}$	0.297	50:1	$5.1x10^{-5}$	0.0084
			30:1	$8.5x10^{-5}$	0.0140
			15:1	$1.7x10^{-4}$	0.0280
Medium level (3:1)	$5.1x10^{-3}$	0.595	50:1	$1.0x10^{-4}$	0.0168
			30:1	$1.7x10^{-4}$	0.0280
			15:1	$3.4x10^{-4}$	0.0561
High level (1.6:1)	$9.6x10^{-3}$	1.115	50:1	$1.9x10^{-4}$	0.0315
			30:1	$3.2x10^{-4}$	0.0526
			15:1	$6.4x10^{-4}$	0.1051

Table B2 Calculation of styrene loading and AIBN loading for CTAT concentration 10 %wt in the 100 g of total weight solution

styrene loading (CTAT:ST)	Mole of styrene	Total volume of ST (mL)	AIBN loading (Styrene:AIBN)	Mole of AIBN	Total weight of AIBN (g)
Low level (6:1)	0.0037	0.424	50:1	$7.3x10^{-5}$	0.0120
			30:1	$1.2x10^{-4}$	0.0200
			15:1	$2.4x10^{-4}$	0.04004
Medium level (3:1)	0.0073	0.849	50:1	$1.5x10^{-4}$	0.0240
			30:1	$2.4x10^{-4}$	0.0400
			15:1	$4.9x10^{-4}$	0.0801
High level (1.6:1)	0.0137	1.593	50:1	$2.7x10^{-4}$	0.0451
			30:1	$4.6x10^{-4}$	0.0751
			15:1	$9.1x10^{-4}$	0.1501

Table B3 Calculation of styrene loading and AIBN loading for CTAT concentration 20 %wt in the 100 g of total weight solution

styrene loading (CTAT:ST)	Mole of styrene	Total volume of ST (mL)	AIBN loading (Styrene:AIBN)	Mole of AIBN	Total weight of AIBN (g)
Low level (6:1)	0.0073	0.849	50:1	$1.5x10^{-4}$	0.0240
			30:1	$2.4x10^{-4}$	0.0400
			15:1	$4.9x10^{-4}$	0.0801
Medium level (3:1)	0.0146	1.6953	50:1	$2.9x10^{-4}$	0.0480
			30:1	$4.9x10^{-4}$	0.0801
			15:1	$9.8x10^{-4}$	0.1601
High level (1.6:1)	0.0274	3.185	50:1	$5.5x10^{-4}$	0.0901
			30:1	$9.1x10^{-4}$	0.1501
			15:1	$1.8x10^{-3}$	0.3003

Appendix C Scanning Electron Micrographs of Polystyrene

Figures C1-C3 show the scanning electron micrographs of polystyrene after precipitation in methanol and drying in vacuum oven. They represent samples obtained from 5%wt 10%wt and 20%wt CTAT solutions, with CTAT to styrene ratios from 6:1 to 1.3:1 and styrene to AIBN ratio at 15:1 at 70 °C. The scanning electron micrographs show the aggregated polystyrene particles.

Morphology of polystyrene polymerized in various micelles of CTAT surfactant could not be observed by scanning electron micrographs because the sample preparations are not suitable for SEM characterization.

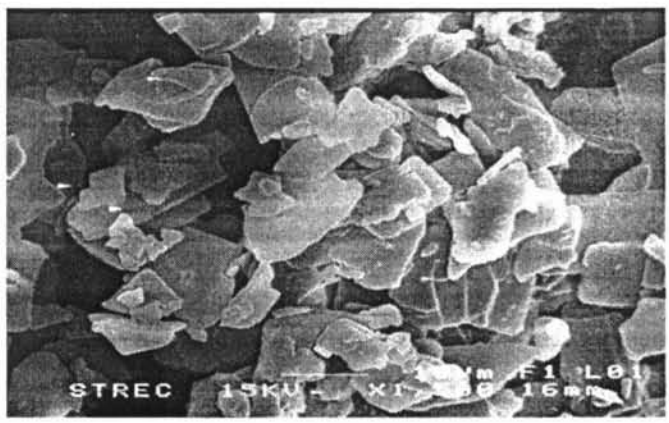

Figure C1 Micrographs of polystyrene polymerized in 5%wt CTAT, 1.6 mole of CTAT: 1 mole of styrene and 15 mole of styrene:1 mole of AIBN at 70 °C with 1500X magnification.

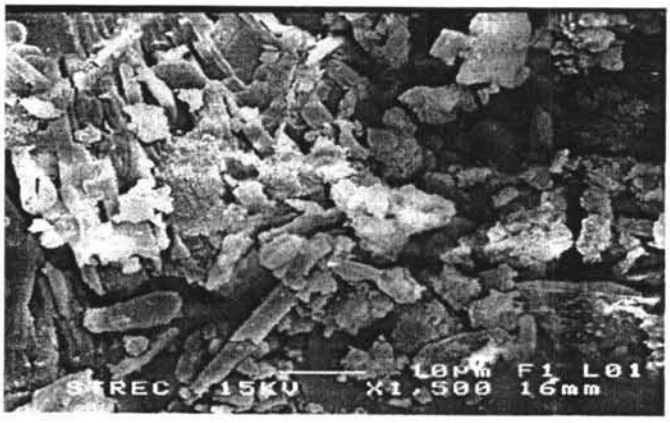

Figure C2 Micrographs of polystyrene polymerized in 10%wt CTAT, 1.6 mole of CTAT: 1 mole of styrene and 15 mole of styrene:1 mole of AIBN at 70 °C with 1500X magnification.

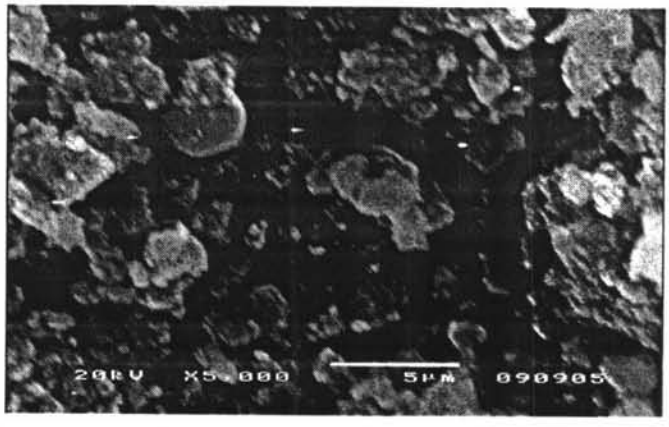

Figure C3 Micrographs of polystyrene polymerized in 20%wt CTAT, high styrene loading (1.6:1) and 15 mole of styrene:1 mole of AIBN at 70 °C with 1500X magnification.

Appendix D Data of Gel Permeation Chromatography.

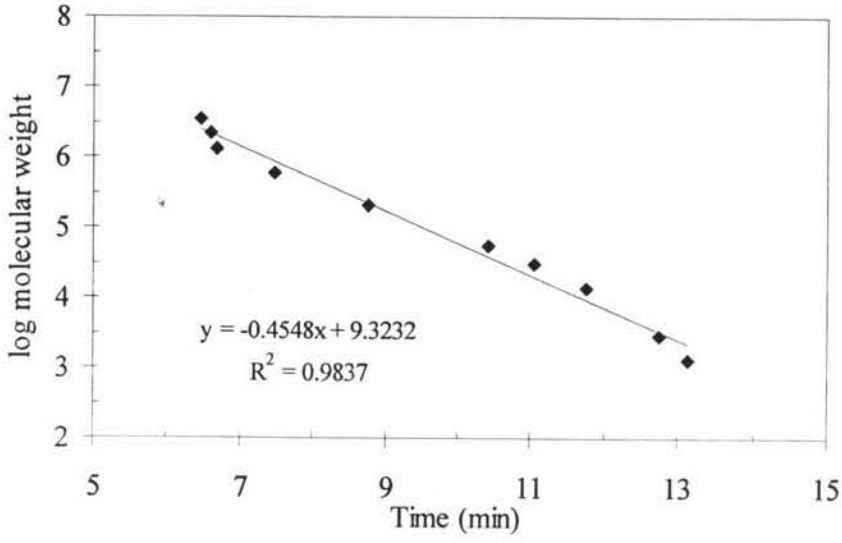

Figure D1 Calibration curve of styrene standard solution by Gel Permeation Chromatography.

Table D1 Data of calibration curve

	Retention time (min)	Molecular weight
1	6.444	3440000
2	6.604	2170000
3	6.686	1340000
4	7.485	575000
5	8.763	202000
6	10.411	54100
7	11.034	30500
8	11.753	13800
9	12.736	2960
10	13.123	1300

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